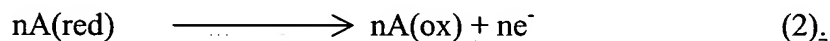
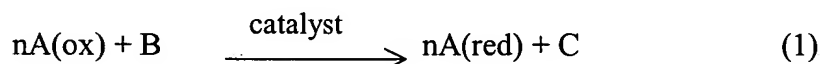


**In the Specification:**

Please replace paragraph [0090] with replacement paragraph set forth, as marked to show changes being made.

The potential may be applied either before or after the sample has been placed in the sample chamber. The potential is preferably applied after the sample has come to rest in the sample chamber to prevent electrolysis of sample passing through the measurement zone as the sample chamber is filling. When the potential is applied and the sample is in the measurement zone, an electrical current will flow between the working electrode and the counter electrode. The current is a result of the electrolysis of the analyte in the sample. This electrochemical reaction occurs via the redox mediator and the optional second electron transfer agent. For many biomolecules, B, the process is described by the following reaction equations:



Biochemical B is oxidized to C by redox mediator species A in the presence of an appropriate enzyme. Then the redox mediator A is oxidized at the electrode. Electrons are collected by the electrode and the resulting current is measured.

Please replace paragraph [0093] with replacement paragraph set forth, as marked to show changes being made.

In a preferred embodiment of the invention, coulometry is used to determine the concentration of the analyte. This measurement technique utilizes current measurements obtained at intervals over the course of the assay, to determine analyte concentration. These current measurements are integrated over time to obtain the amount of charge, Q, passed to or from the electrode. Q is then used to calculate the concentration of the analyte by the following equation:

$$[\text{analyte}] = Q/nFV \quad (3)$$

where  $n$  is the number of electron equivalents required to electrolyze the analyte,  $F$  is Faraday's constant (approximately 96,500 coulombs per equivalent), and  $V$  is the volume of sample in the measurement zone.

Please replace paragraph [0115] with replacement paragraph set forth, as marked to show changes being made.

Standard optical sensors, including light-guiding optical fiber sensors, and measurement techniques can be adapted for use with the air-oxidizable mediators. For example, the optical sensors of the invention may include a light-transmitting or light reflecting support on which the air-oxidizable redox species, and preferably an analyte-responsive enzyme, is coated to form a film. The support film forms one boundary for the measurement zone in which the sample is placed. The other boundaries of the measurement zone are determined by the configuration of the cell. Upon filling the measurement zone with an analyte-containing sample, reduction of the air-oxidizable mediator by the analyte, preferably via reaction with the analyte-responsive enzyme, causes a shift in the mediator's oxidation state that is detected by a change in the light transmission, absorption, or reflection spectra or in the fluorescence of the mediator at one or more wavelengths of light.

Please replace paragraph [0131] with replacement paragraph set forth, as marked to show changes being made.

The sample was introduced via a small tab of nylon sorbent material formed as an extension from the nylon sorbent in the sample chamber. Liquid was wicked into the sorbent when contact was made between the sample and the sorbent tab. As the sample chamber filled and the sample made contact with the electrodes, current flowed between the electrodes. When glucose molecules in the sample came in contact with the glucose oxidase on the

working electrode, the glucose molecules were electrooxidized to gluconolactone. The osmium redox centers in the redox mediator then reoxidized the glucose oxidase. The osmium centers were in turn reoxidized by reaction with the working electrode. This provided a current which was measured and simultaneously integrated by a coulometer. (EG&G Princeton Applied Research Model #173).

Please replace paragraph [0157] with replacement paragraph set forth, as marked to show changes being made.

The electrode was cured at room temperature for 24 hours. The coplanar electrode array was then immersed in a buffered electrolyte solution, and a potential of +200 mV (sufficient for conversion of Os(II) to Os(III);) was applied between the working electrode and the reference electrode.